

Prologue

In creating the ACR Appropriateness Criteria® (ACR AC), the ACR Task Force on Appropriateness Criteria, incorporated attributes for developing acceptable medical practice guidelines used by the Agency for Healthcare Research and Quality (AHRQ) as designed by the Institute of Medicine. These attributes are:

Validity: Guidelines are valid if they lead to better outcomes. Validity assessment should be based on the quality of the scientific evidence and the method of evidence evaluation.

Reliability/Reproducibility: Another set of experts should be able to produce similar guidelines when using the same methodology to evaluate the same scientific evidence.

Clinical Applicability: Guidelines should include an explicit description of the applicable patient population.

Clinical Flexibility: Guidelines must specify known or expected exceptions.

Clarity: Guidelines must be unambiguous with clearly-defined terms. They should be presented in a logical manner and be easy to follow.

Multidisciplinary Process: Affected provider groups should have representation in the guideline development process.

Scheduled Review: All guidelines should undergo scheduled review to determine whether revision is indicated based on current scientific evidence.

Documentation: The development procedure, the participants, the evidence, and the methods of analysis should be documented.

The AHRQ is explicit in stating its intent that scientific evidence should be used as much as possible but that judgment and group consensus will be necessary in the development of medical guidelines. The National Guidelines Clearinghouse (NGC), one of the initiatives of AHRQ, is a public resource for evidence-based clinical practice guidelines. The ACR AC topics are posted on the [NGC site](#), as well as on the ACR website (www.acr.org/ac).

Committee Structure

In 2000, the ACR Task Force on Appropriateness Criteria became the Committee on Appropriateness Criteria under the ACR's Commission on Quality and Safety. The [Committee](#), consisting of the panel chairs and the chair of the Committee on Appropriateness Criteria, oversee the activities of twenty consensus panels - ten diagnostic and ten therapeutic. The diagnostic panels are mainly organized along body systems (breast, cardiac, gastrointestinal, musculoskeletal, neuroradiology, thoracic, urologic, vascular, pediatric and women's imaging). There are separate therapeutic panels for

radiation oncology (bone, brain, breast, gynecologic, head and neck, Hodgkin's Lymphoma, lung, prostate, and rectal/anal) and interventional radiology. Each consensus panel is chaired by an individual with leadership capabilities and national recognition of expertise in the area of focus.

The Subcommittee on Radiation Exposure reviews and assesses the relative radiation levels for the procedures included in the topics.

The Appropriateness Criteria Committee develops and reviews the methodology and provides direction for the management of the overall criteria development process, including timelines. Consultants to the Committee provide additional expertise as needed; for example, providing advice in the development of consensus techniques or reviewing the legal implications associated with setting national medical guidance.

Each panel chair is responsible for selecting the radiology or radiation oncology panel participants. Physicians with diverse geographical representation are included from academic and private practice settings. Panelists have expertise in applicable imaging modalities or clinical settings. Major medical societies representing specialties outside of radiology also participate in the development of the criteria. More than 60 representatives from over 19 [non-radiology specialty organizations](#) are currently participating on the ACR AC expert panels.

Over 250 volunteer physician representatives are involved in the criteria development process. The funding for the process is assumed entirely by the American College of Radiology. ACR staff provides support to the expert panels, including literature searches, acquisition of scientific articles, drafting of evidence tables, dissemination of materials for the Delphi process, collation of results, conference calls, document processing, and general assistance of the panelists.

Process of Criteria Development

Each panel selects clinical conditions to be addressed based on the prevalence of the condition, the variability of practice, the relative cost, the potential for morbidity or mortality, and the potential for improved care. Each question is clarified and refined to be as specific as possible and frequently clinical conditions are broken down into a number of variants.

Once the clinical condition and its variants have been defined, a literature search of peer-reviewed medical journals is conducted and the relevant articles are identified and collected. The topic author drafts or revises the narrative text summarizing the evidence found in the literature. ACR staff draft an evidence table based on the analysis of the selected literature. These tables rate the strength of the evidence for all articles included in the narrative text.

The expert panel reviews the narrative text, evidence table and the supporting literature for each of the topic-variant combinations and assigns an appropriateness rating for each procedure listed in the table. Each individual panel member forms his/her own opinion based on his/her interpretation of the available evidence.

The ACR AC presently address over 160 clinical conditions with over 800 variants. New topics are added to reflect changes in technology and clinical practice. The appropriateness criteria are reviewed and updated by the panels at least biennially, depending on introduction of new and highly significant scientific evidence.

Rating Appropriateness

The ACR has adopted the AQA's definition of appropriateness. "The concept of appropriateness, as applied to health care, balances risk and benefit of a treatment, test, or procedure in the context of available resources for an individual patient with specific characteristics. Appropriateness criteria provide guidance to supplement the clinician's judgment as to whether a patient is a reasonable candidate for the given treatment, test or procedure."¹

The assumption when assessing appropriateness is that the ordering health care provider has not yet determined whether a radiological procedure is clinically useful for the specific situation. The expert panel may recommend no radiological procedure as being appropriate for a specific clinical scenario. In those instances where more than one radiological procedure may be appropriate, the expert panel will provide additional guidance or clarification of the issues.

The appropriateness ratings for each of the procedures included in the AC topics are determined by a modified Delphi methodology.

Modified Delphi Technique

When the data available from existing scientific studies are insufficient, the ACR AC employs systematic consensus techniques to determine appropriateness. The ACR AC panels use a modified Delphi technique to determine the rating for a specific procedure. A series of surveys are conducted to elicit each individual panelist's expert opinion of the appropriateness of an imaging or therapeutic procedure for a specific clinical scenario based on the available data. ACR staff distributes surveys to the panelists along with the evidence table and narrative. Each panelist interprets the available evidence and rates each procedure. Voting surveys are completed by panelists without consulting other panelists. The ratings are integers on a scale between 1 and 9, where 1 means the panel member feels the procedure is "least

appropriate" and 9 means the panel member feels the procedure is "most appropriate". Each panel member has one vote per round to assign a rating. The surveys are collected and de-identified and the results are tabulated and redistributed after each round. A maximum of three rounds are conducted. The modified Delphi technique enables each panelist to express individual interpretations of the evidence and his or her expert opinion without excessive bias from fellow panelists in a simple, standardized and economical process.

Consensus among the panel members must be achieved to determine the final rating for each procedure. If eighty percent (80%) of the panel members agree on a single rating or one of two consecutive ratings, the final rating is determined by the rating that is closest to the median of all the ratings. Up to three voting rounds are conducted to achieve consensus.

If consensus is not reached through the modified Delphi technique, the panel is convened by conference call. The strengths and weaknesses of each imaging examination or procedure are discussed and a final rating is proposed. If the panelists on the call agree, the rating is accepted as the panel's consensus. The document is circulated to all the panelists to make the final determination. If consensus cannot be reached, "No consensus" appears in the rating column and the reasons for this decision are added to the comment sections.

Use of Appropriateness Criteria

The ACR Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the FDA have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

For more information on the ACR Appropriateness Criteria®, please contact the ACR at acr_ac@acr.org.

¹ from the AQA Principles for Appropriateness Criteria - These principles are a subset of the general AQA Parameters for Selecting Measures for Physician Performance. They are not to be viewed independently of that document.